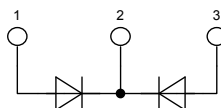


HiPerFRED²

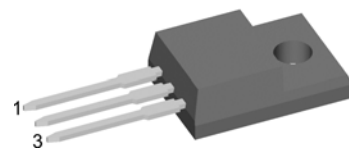
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DPG 20 C 200 PN



$$\begin{aligned} V_{RRM} &= 200 \text{ V} \\ I_{FAV} &= 2 \times 10 \text{ A} \\ t_{rr} &= 35 \text{ ns} \end{aligned}$$



Backside: isolated

E72873

Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{rm} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package:

- Housing: TO-220FP
- Industry standard outline
- Plastic overmolded tab for electrical isolation
- Isolation Voltage 2500 V
- UL registered E 72873
- Epoxy meets UL 94V-0
- RoHS compliant

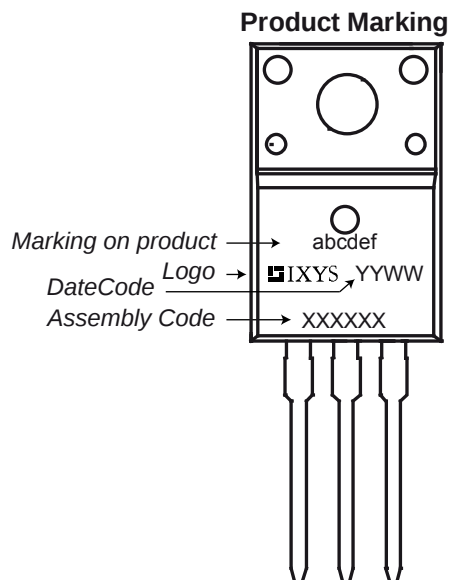
Ratings

Symbol	Definition	Conditions	min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25^{\circ}\text{C}$			200	V
I_R	reverse current	$V_R = 200 \text{ V}$ $T_{VJ} = 25^{\circ}\text{C}$			1	μA
		$V_R = 200 \text{ V}$ $T_{VJ} = 150^{\circ}\text{C}$			0.06	mA
V_F	forward voltage	$I_F = 10 \text{ A}$ $T_{VJ} = 25^{\circ}\text{C}$			1.27	V
		$I_F = 20 \text{ A}$			1.45	V
		$I_F = 10 \text{ A}$ $T_{VJ} = 150^{\circ}\text{C}$			0.98	V
		$I_F = 20 \text{ A}$			1.17	V
I_{FAV}	average forward current	rectangular $d = 0.5$ $T_C = 125^{\circ}\text{C}$			10	A
V_{FO}	threshold voltage	$T_{VJ} = 175^{\circ}\text{C}$ } for power loss calculation only			0.74	V
r_F	slope resistance				17.7	$\text{m}\Omega$
R_{thJC}	thermal resistance junction to case				4.40	K/W
T_{VJ}	virtual junction temperature		-55		175	$^{\circ}\text{C}$
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$			35	W
I_{FSM}	max. forward surge current	$t = 10 \text{ ms}$ (50 Hz), sine $T_{VJ} = 45^{\circ}\text{C}$			140	A
I_{RM}	max. reverse recovery current	$T_{VJ} = 25^{\circ}\text{C}$		3		A
		$I_F = 10 \text{ A}; V_R = 130 \text{ V}$ $T_{VJ} = 125^{\circ}\text{C}$		5.5		A
t_{rr}	reverse recovery time	$-di_F/dt = 200 \text{ A}/\mu\text{s}$ $T_{VJ} = 25^{\circ}\text{C}$		35		ns
		$T_{VJ} = 125^{\circ}\text{C}$		45		ns
C_J	junction capacitance	$V_R = 150 \text{ V}; f = 1 \text{ MHz}$ $T_{VJ} = 25^{\circ}\text{C}$		15		pF

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per pin ¹⁾			35	A
R_{thCH}	thermal resistance case to heatsink			0.50		K/W
T_{stg}	storage temperature		-55		150	°C
Weight				2		g
M_D	mounting torque		0.4		0.6	Nm
F_C	mounting force with clip		20		60	N
V_{ISOL}	isolation voltage	t = 1 second	2500			V
		t = 1 minute	2000			V
d_s	creepage distance on surface		1.07			mm
d_A	striking distance through air		1.07			mm

¹⁾ I_{RMS} is typically limited by: 1. pin-to-chip resistance; or by 2. current capability of the chip.

In case of 1, a common cathode/anode configuration and a non-isolated backside, the whole current capability can be used by connecting the backside.

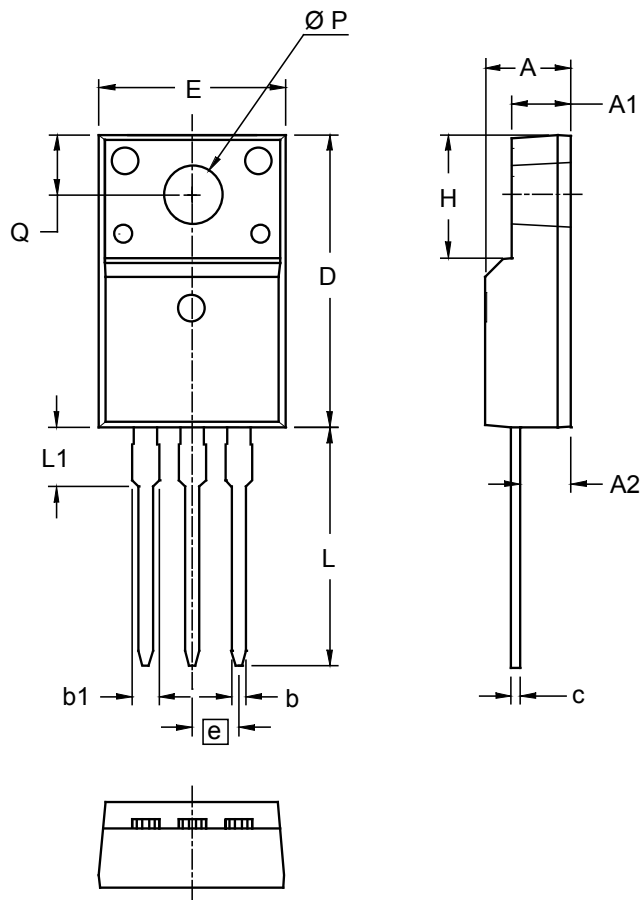


Part number

D = Diode
 P = HiPerFRED
 G = extreme fast
 20 = Current Rating [A]
 C = Common Cathode
 200 = Reverse Voltage [V]
 PN = TO-220ABFP (3)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPG 20 C 200 PN	DPG20C200PN	Tube	50	503658

Similar Part	Package	Voltage Class
DPG20C200PB	TO-220AB (3)	200

Outlines TO-220FP


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.177	.193	4.50	4.90
A1	.092	.108	2.34	2.74
A2	.101	.117	2.56	2.96
b	.028	.035	0.70	0.90
b1	.050	.058	1.27	1.47
c	.018	.024	0.45	0.60
D	.617	.633	15.67	16.07
E	.392	.408	9.96	10.36
e	.100 BSC		2.54 BSC	
H	.255	.271	6.48	6.88
L	.499	.523	12.68	13.28
L1	.119	.135	3.03	3.43
$\varnothing P$	.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40

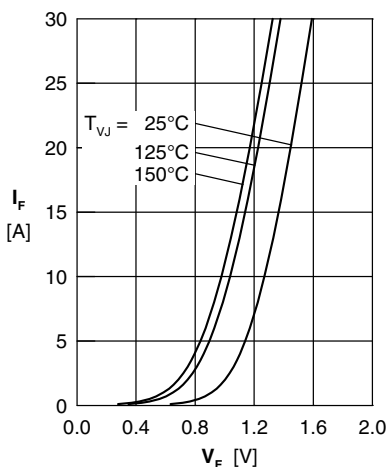


Fig. 1 Forward current I_F versus forward voltage drop V_F

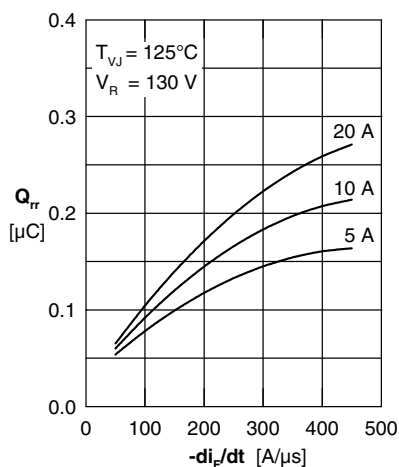


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

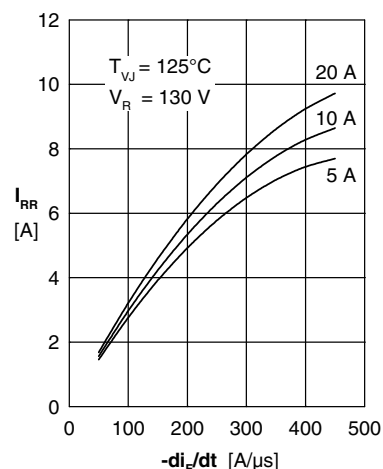


Fig. 3 Typ. reverse recovery current I_{RR} versus $-di_F/dt$

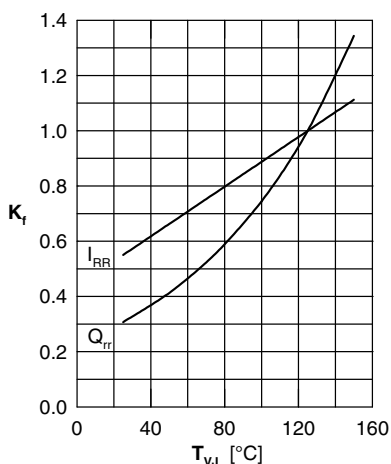


Fig. 4 Dynamic parameters Q_{rr} , I_{RR} versus T_{VJ}

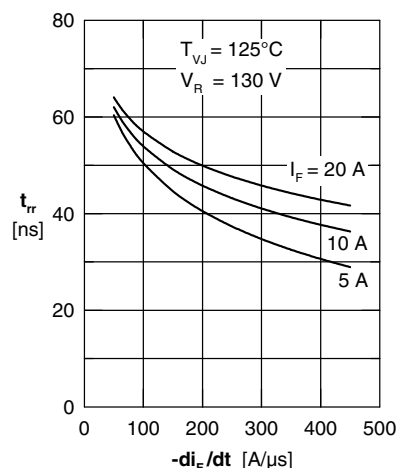


Fig. 5 Typ. reverse recovery time t_{rr} versus $-di_F/dt$

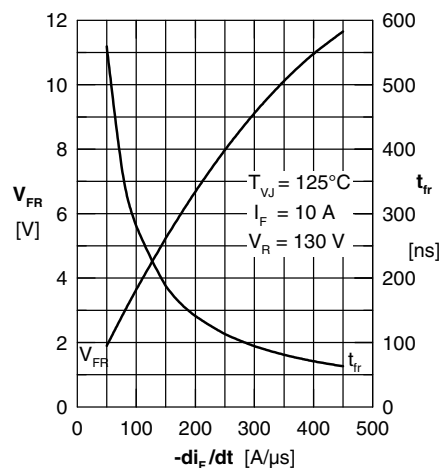


Fig. 6 Typ. forward recovery voltage V_{FR} and t_{fr} versus di_F/dt

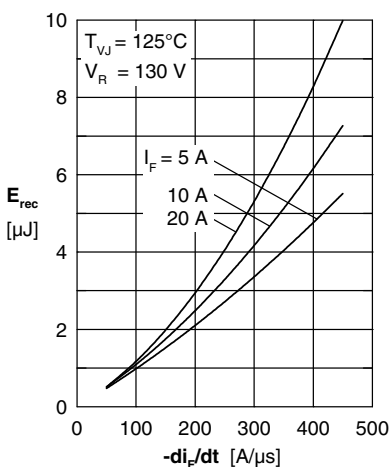


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

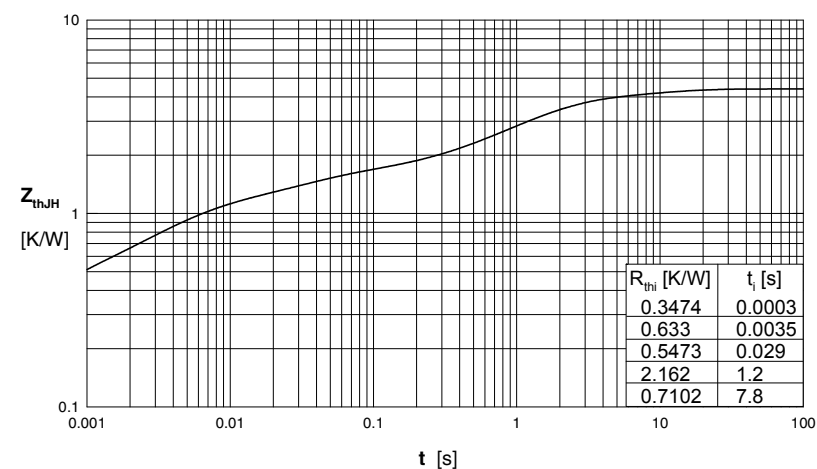


Fig. 8 Transient thermal resistance junction to case